

CLAIMS

1. A rivet for use in joining an assembly of two or more material layers through a rivet hole extending through said layers, said layers having a thickness and said assembly having a first side that is accessible for the insertion of said rivet and a second side that is inaccessible for the setting of said rivet from that side, said rivet comprising:

a first rivet head larger than said rivet hole,

a tubular rivet body of plastically deformable material attached at one end to said rivet head and having a second end for plastic deformation into a second rivet head, said tubular rivet body being shaped and sized to fit into and through said rivet hole, and

an extrudable body of adhesive in said tubular rivet body;

said tubular rivet body having a length including a first portion starting at said rivet head with a first portion length to extend through said layers and to contain a first portion of said adhesive, and a second portion with a second portion length for containing a second portion of said adhesive, said first portion having holes for expulsion of adhesive from said tubular rivet body, and said second portion having weakened regions for plastically deforming said second portion of said tubular rivet body as a rivet head against said second side of said assembly and for extruding said second portion of adhesive into said first portion of said rivet body and expelling said first portion of said adhesive.

2. A rivet as recited in claim 1 further comprising a mandrel shaft terminating in a mandrel head, said mandrel head being positioned against the end of the second portion of said tubular rivet body for plastically deforming said second portion of said tubular rivet body as said second rivet head, said mandrel shaft extending within said tubular rivet body and

through a hole in said first rivet head, said first portion of said adhesive being contained around said mandrel shaft.

3. A rivet as recited in claim 1 comprising one or more circumferential bands of weakened regions in said second portion of said tubular body and further comprising a mandrel shaft terminating in a mandrel head, said mandrel shaft extending within said tubular rivet body and through a hole in said first rivet head, said first portion of said adhesive being contained around said mandrel shaft, said mandrel head being positioned against the end of the second portion of said tubular rivet body for plastically deforming said second portion of said tubular rivet body into one or more folds of said deformable material as said second rivet head and for extruding said second portion of adhesive into said first portion of said rivet body and expelling said first portion of said adhesive.

4. A rivet as recited in claim 1 in which the second portion length of said tubular rivet body accommodates at least one quarter of the total of said first and second portions of adhesive.

5. A rivet as recited in claim 2 in which the second portion length of said tubular rivet body accommodates at least one quarter of the total of said first and second portions of adhesive

6. A rivet as recited in claim 3 in which the second portion length of said tubular rivet body accommodates at least one quarter of the total of said first and second portions of adhesive

7. A rivet as recited in claim 3 in which said weakened band is formed by a corrugation in said second portion.

8. A rivet as recited in claim 3 in which said weakened band is formed by thinned material in said second portion.

9. A rivet as recited in claim 3 in which said weakened band is formed by softened material in said second portion.

10. A rivet for use in joining an assembly of two or more material layers through a rivet hole extending through said layers, said layers having a thickness and said assembly having a first side that is accessible for the insertion of said rivet and a second side that is inaccessible for the setting of said rivet from that side, said rivet comprising:

a first rivet head larger than said rivet hole,

a tubular rivet body of plastically deformable material attached at one end to said rivet head and having a second end for plastic deformation into a second rivet head, said tubular rivet body being shaped and sized to fit into and through said rivet hole,

a mandrel shaft terminating in a mandrel head, said mandrel head being positioned against the end of the second portion of said tubular rivet body for plastically deforming said second portion of said tubular rivet body as said second rivet head, said mandrel shaft extending within said tubular rivet body and through a hole in said first rivet head, and

a body of extrudable adhesive in said tubular rivet body around said mandrel shaft;

said tubular rivet body having a length including a first portion starting at said rivet head with a first portion length to extend through said layers and to contain a first portion of said adhesive, and a second portion with a second portion length for containing a second portion of said adhesive, said first portion having holes for expulsion of adhesive from said tubular rivet body, and said second portion having weakened regions for plastic deformation of said second portion of said tubular rivet body as a

rivet head against said second side of said assembly and for extrusion of said second portion of adhesive into said first portion of said rivet body and expelling said first portion of said adhesive from said tubular body through said holes in said first body portion.

11. A rivet as recited in claim 10 in which said weakened band is formed by a corrugation in said second portion.

12. A rivet as recited in claim 10 in which said weakened band is formed by thinned material in said second portion.

13. A rivet as recited in claim 10 in which said weakened band is formed by softened material in said second portion.

14. A rivet comprising a rivet head with an attached tubular rivet body for containing an extrudable adhesive, said body having a length extending from the rivet head to an open end and characterized by a first body portion beginning at said rivet head and a second body portion terminating at said open end, said first body portion having holes along its length for expulsion said adhesive and said second body portion being plastically deformable and having weakened bands along its length for folding into a second rivet head and for extruding adhesive from said second body portion into said first body portion.